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message. It'll have no effect on either your computer or your panel switch configuration. What you might see will be the S-band noise that's associated with the break lock. However, you should still have a good signal on your power meter. This is not a loss of signal, but rather just a loss of the voice modulation, and I'll do you a mark just before we do that so that you can turn your S-band volume down if you so desire, and we'll be back up in this mode that we're in now in 2-1/2 minutes.

00 12 11 13 LMP

Roger.

00 12 11 31 CC

Apollo 8, Houston. We're about to disable the voice modulation on uplink, and we'll be back up no later than 12:13.

00 12 14 26 CC

Apollo 8, Houston. Voice check.

00 12 14 29 LMP

Read you five-by, Houston.

00 12 14 37 CC

Apollo 8, Houston.

00 12 14 40 LMP

Roger, Houston. Read you loud and clear and am with you. Completed our second test.

00 12 14 47 LMP

Okay.

00 12 14 57 CC

Okay. Our next test will be a test of the uplink voice and ranging with downlink voice and ranging and on low bit rate, so we'll be changing bit rate on you, and we'll be making a voice check in the middle.

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00 12 15 12 LMP Okay. You've about had it on the high gain.
You might try to get it in, but it's going to
hit the scan limit at any second.

00 12 15 28 CC Okay, Apollo 8. Looks like we'll get our infor-
mation before we lose the high gain.

00 12 15 34 LMP Okay. We'll just leave it go.

00 12 15 36 CC Roger.

00 12 16 21 LMP They got the scan limit. We'll let it go,
Houston, until it breaks lock.

00 12 16 33 CC Okay, Apollo 8. Go ahead and switch to the OMNI.

00 12 16 38 LMP How're you doing with your test?

00 12 16 40 CC Okay. We've got three-fifths of the test. We'll
have to pick up the rest next time we get a look
at high gain.

00 12 16 47 LMP Okay.

00 12 26 56 CMP Houston, Apollo 8.

00 12 26 59 CC Go ahead, Apollo 8.

00 12 27 01 CMP Roger. Reading on P21 at 269 10 indicates a
parallel of about 67.4 miles. I guess we can
carry her.

00 12 27 12 CC You guys are getting pretty good.

00 12 27 16 CMP That's a lot better than our first answer.

00 12 27 23 LMP We don't care if we're right, just so MPAD
is right.

00 12 38 20 CMP Houston, Apollo 8.

00 12 38 23 CC Go ahead, Apollo 8.

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00 12 38 26

CMP

Roger. I'd like to ask a question about this
TLI plus 11 maneuver that we copied. In the
remarks, you have P37, DELTA-V 7900. Is this
the DELTA-V that we would use with P37?

00 12 38 43

CC

Okay. That's the option that you use with mini-
mum time.

00 12 38 51

CMP

Roger. What I'd like to do is check on our P37
with your TLI maneuver update.

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O --- CC Okay, Apollo 8. We'd like to make sure that we don't have a misunderstanding that this 7900 feet per second is the DELTA-V. It's not associated with the high speed per feet work around procedure. This is just a standard P37 DELTA-V.

00 12 40 22 LMP Roger. But was that the DELTA-V that you used to give us the TLI plus 11? Okay.

00 12 40 32 CC Okay. That's not the one that the maneuver PAD was based on. That's the number you put in for the minimum time.

00 12 40 44 LMP Roger. Understand.

00 12 40 46 CC Okay. Sounds like a good idea if you want to go ahead and check out the 37. And we're standing by to work on COMM as soon as that high gain is available.

00 12 40 54 LMP Roger.

00 12 44 54 LMP Okay. Houston, you got the high gain.

00 12 46 03 LMP Houston, do you read? Apollo 8. Over.

00 12 46 22 CC Apollo 8, Houston.

00 12 46 25 LMP Roger. High gain yours.

00 12 46 29 CC Okay. And if you're ready, we are. We'll go right ahead with our COMM checks.

00 12 46 34 LMP Go ahead.

00 12 46 40 CC We're starting in now on our fourth test. Like for you to put your TELEMETRY INPUT switch to PCM HIGH.

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00 12 46 59 LMP It's in HIGH.

00 12 47 01 CC Okay. And now we're going to switch uplink to the upvoice backup for about 2 minutes, and it may take a couple of seconds when you hear the upvoice lost. So you can place your up-telemetry switch to upvoice backup, and in the event that all of this doesn't work out too well, I'm reading 12:47 on my clock now, and let's meet back in our present configuration no later than 12:50.

00 12 47 33 LMP Roger. On upvoice backup.

00 12 47 35 CC Okay. Thank you.

00 12 48 16 CC Apollo 8, Houston.

00 12 48 20 LMP Roger, Houston. Read you loud and clear.

00 12 48 22 CC Okay. That's pretty good. That's upvoice backup, and will you confirm that you're in NARROW BEAM on high gain?

00 12 48 31 LMP Roger. NARROW BEAM.

00 12 48 33 CC Okay. Thank you. We're going to continue tracking and watching high-gain antenna for a couple of minutes. Then I'll give you a call when we're ready to go back.

00 12 48 50 LMP Roger.

00 12 50 03 CC Apollo 8, Houston. We have completed this test. We'll be switching back to full uplink. When you hear the noise associated with the loss of modulation, you can go back from the up-telemetry switch to DATA.

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00 12 50 16 LMP Thank you.

00 12 50 51 LMP All the way.

00 12 50 52 CC Okay. Loud and clear.

00 12 50 59 LMP How's everything looking down there?

00 12 51 01 CC Real fine. We've just got one to go here if you'll put your telemetry input PCM switch to LOW.

00 12 51 09 LMP Roger. Go in LOW.

00 12 51 12 CC Okay. We'll be in that configuration for about 2 minutes, and then we'll be completed with the COMM test.

00 12 51 19 LMP Roger.

00 12 51 20 CC I have some service module RCS quantities if you would like to take them sometime and check them against your onboard calculations.

00 12 51 31 SC Stand by.

00 12 52 20 SC Roger. Ready to copy. Could you give quad A, B, C, and D in that order?

00 12 52 24 CC Okay. Will do. And I'll give you weights in pounds and percentages. Quad A 231 for 76 percent.

00 12 52 37 LMP Roger. Stand by. What time is that for?

00 12 52 41 CC Oh, 12 plus 15.

00 12 53 06 LMP Okay. Got it.

00 12 53 08 CC Okay. Quad Bravo 251, 82 percent. Quad Charlie 240, 79 percent.

00 12 53 20 LMP Slow down.

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00 12 53 29 CC Quad Delta 245, 81 percent. P and C advises that these numbers are still good even though it is a 12:15 time. And we are completed with the COMM test. You can take your high-gain antenna and go back to MEDIUM.

00 12 53 57 LMP Roger. MEDIUM.

00 12 54 36 CC Apollo 8, we would like to dump your tape again, if you are not using it. And the reason we want to do this is we have some - we didn't completely get dumped before the burn. We would like to get that and get the rest of the burn data. There is no hurry on it. We can do it whenever it is convenient for you.

00 12 54 54 LMP You got it.

00 12 54 57 CC Okay. Thank you.

00 12 56 18 CC Apollo 8, Houston. Do you call?

00 12 56 22 LMP Negative, negative. Negative, Houston.

00 12 56 26 CC Okay. Thank you. Say, we're curious about what you did with your Mae West?

00 12 56 52 LMP We thought we might bleed the CO₂ out into the vacuum connector here in our next water dump. We forgot it the last time. Did you copy?

00 12 57 10 CC Roger. Doesn't seem like there is any problem with going ahead and dumping it in the cockpit if you like.

00 12 57 37 LMP It is CO₂, isn't it?

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00 12 57 39 CC That's affirm.

00 12 58 15 CC Apollo 8, Houston. We asked it again, and it looks like no problems at all with going ahead and bleeding it down in the cockpit. And then if you need it again on entry or after entry, well, we can blow it up with oral tube.

00 12 58 33 LMP Roger. Understand.

00 13 02 11 CC Apollo 8, Houston.

00 13 03 10 CC Apollo 8, Houston.

00 13 04 18 CC Apollo 8, Houston.

00 13 06 12 CC Apollo 8, Houston.

00 13 06 16 LMP Houston, Apollo 8. Read you loud and clear. How us?

00 13 06 19 CC Okay. Loud and clear. Didn't get you there for a while.

00 13 06 24 LMP We have been reading you all along, Houston.

00 13 06 28 CC Roger. Did you attempt to transmit, or were you just not getting through?

00 13 06 35 LMP Roger. We attempted to transmit, and it sounded like you had a stuck mike there for a little while.

00 13 06 46 CC Okay. That shouldn't make any difference to us on that Duplex mode. Okay. What I was calling for, Apollo 8 - we have got a maneuver PAD that is TLI plus 25. I would like to read up to you when you are ready for it.

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00 13 07 24 LMP Go ahead, Houston. TLI plus 25.

00 13 07 28 CC Okay. TLI plus 25, and this will be an SPS/G&N.
63087, minus 162, plus 129 027 56 29 64, minus 001
63, plus 00001, plus 527 59 177 137 001, November
Alfa, plus 00201 527 59 623 525 43 14 2347 337 023
up 195 left 17, plus 11 45, minus 165 00 127 80 358
90 074 3816, north stars 068 097 356, no ullage.
For the fast return P37 DELTA-V, 7900 to the
Indian Ocean. High-speed procedures are not
required. Over.

00 13 10 35 CMP Houston, Apollo 8. Maneuver PAD as follows. How
do you read? Over.

00 13 10 40 CC Loud and clear.

00 13 10 43 CMP Roger. TLI plus 25, SPS/G&N 63087, minus 162
plus 129 027 56 2964, minus 00163, plus 00001, plus
52759 177 137 001, not applicable, plus 00201
52759 623 52543 14 2347 337 023 up 195 left 1.7,
plus 1145, minus 16500 12780 35890 074 38 16.
North set 068 097 356, no ullage, P37 fast return of
7 - 700 and 7900 DELTA-V Indian Ocean. High speed
not required.

00 13 12 12 CC That's correct, Apollo 8. And we'll have a couple
more things for you before too long. We're
working on a flyby PAD at this time. And we're
going to be talking some more to you about the
problems of looking at stars in the sextant and

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telescope. And what we'd like to do as soon as the black team comes on the MOKR, while we have two teams here, we would like to get a rehash from you on exactly what you see and what you don't see and under what conditions, and see if we can define it so that everyone here understands what you've been telling us. And if you have any comments concerning the timeline - knowing that we got off our timeline before the burn - if you have any comments about that method of getting back on schedule, we'd like to hear those, too.

00 13 13 06	CDR	Roger. We have one request. CDR would like to get clearance to take a Secondal.
00 13 13 21	CC	Okay, Apollo. That's a GO.
00 13 13 29	LMP	Roger. And, Houston, this is 8. We might go over our future NAV sighting schedule if it's going to be revised at all.
00 13 13 45	CC	Okay, Apollo 8. No planned revisions.
00 13 13 50	LMP	Roger.
00 13 20 02	CC	Apollo 8, Houston.
00 13 20 05	CMP	Go ahead, Houston.
00 13 20 07	CC	Okay. Have your flyby PAD now so I can give that to you whenever you're ready for it.
00 13 20 18	CMP	Stand by. Ready to copy.
00 13 20 36	CC	Okay, Apollo 8. Here we go on a flyby maneuver PAD. This will be an SPS/G&N 63087, minus 162, plus

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129 060 59 4804, plus 009 62, plus 005 68, minus 020
77 000 000 000, November Alfa, plus 00202 02359 022
02282 03 0399 314 013 up 048 right 37, plus 1418,
minus 16500 129 04 361 60 146 2911. North stars
323 090 056, no ullage. Remarks: number one, this
requires realignment to preferred REFSMMAT. Two,
this will raise the perilune to 550 nautical miles.
Over.

00 13 23 30	CMP	Roger. Read back.
00 13 23 35	CC	Go ahead.
00 13 23 38	CMP	Flyby SPS/G&N 63087, minus 162, plus 129 060 59 4804, plus 009 62, plus 00568, minus 02077, 000 000 000, NA. Are you with me so far?
00 13 24 07	CC	Keep going.
00 13 24 09	CMP	Plus 00202 02359 022 02282 03 0399 314 013 up 048 right 37, plus 1418, minus 16500 129 04 361 60 146 2911, north 323 090 056, no ullage. Realign for preferred REFSMMAT at perigee is 50.
00 13 25 01	CC	That's a perilune to 550.
00 13 25 05	CMP	Understand. 550.
00 13 25 08	CC	That's affirm, and that's perilune.
00 13 24 12	CMP	Roger.
00 13 27 13	CC	Apollo 8, Houston.
00 13 27 17	CMP	Go ahead, Houston.
00 13 27 19	CC	Okay. We've completed the dump and the tape recorder is yours, and we listened to the call

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data voice playback, and you've been given a GO
for your first test in creative writing.

00 13 27 36 CMP Roger. Are we in low bit rate now?

00 13 27 43 CC That's negative. You're in high bit, and you
understand that it's your tape recorder?

00 13 27 53 CMP Roger. Are you going to stay in high bit all
along, or are you going to be back to low here
soon, not that it matters much to us, really.

00 13 28 12 CC Okay. We plan to stay in high bit rate. We're
going to ask you if it made any difference, and
you read our minds. That's pretty good for 63K.

00 13 28 22 CMP Roger. That's an altitude record for mind reading.

00 13 30 59 SC Houston, Apollo 8.

00 13 31 01 CC Go ahead, Apollo 8.

00 13 31 04 LMP Roger. Onboard calculations indicate that at
13 hours 30 minutes GET we are not 64 200 miles
above the earth. That's using alternate slide
rule.

00 13 31 24 CC We've got 63 855.

00 13 31 37 LMP Houston, this is Apollo 8. We're going to try to
keep the conversation down here for a while so
the CDR can go to sleep.

00 13 31 45 CC Okay. We would like to get some comments from
you before you sign off concerning the telescope,
sextant, and verification that you have done
something with the CO₂ in your Mae West and
comment on the window status.

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00 13 32 06 CMP Roger. Is it a requirement that we do something with the CO₂ at this time? Over.

00 13 32 11 CC No. That is negative.

00 13 32 14 CMP Roger. We have maintained the same condition. We have left it as it was, and we will take care of it later.

00 13 32 21 CC Okay.

00 13 32 32 CMP Let me at this time go over the comments about the navigation as I see it so far.

00 13 32 37 CC Go.

00 13 32 42 CMP In the beginning, the operation with the S-IVB precluded immediate starting up of our sightings as we had scheduled since we had another evasive maneuver. The dumping of the S-IVB caused a tremendous amount of - of psuedo stars in the area which made an optics calibration practically impossible. The method which we had worked out did not seem to work too well. The method which I finally used was to go into P23, go to Sirius, which was our brightest star, get the shaft and trunnion, and then fly the spacecraft up to Sirius to use that for the optics CAL, which we did at a later time. With regards to light scatter, it appears that at almost any attitude during our passive thermal control, we are receiving light scattering in the scanning telescope. It takes

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the form mostly of a wide band of light right across the center of the scope about 10 degrees either direction of zero. It is very difficult to see stars in this area. The realignments have been good. I have been able to pick up the star in the sextant to do the alignment, but I was not able to identify the star which we used in such cases as Regor or Menkent in the scanning telescope. The first star sighting which I took of the earth showed a very indistinct horizon. But there did appear to be a very - or somewhat sharp line between what appeared to be the earth's horizon and the atmosphere. The landmark line-of-sight filter appeared to help out this horizon definition. There is a very hazy and indistinct horizon through - between the space and the top of the atmosphere itself, and this is a very difficult one to use. As I said before, at times, looking at the moon with the sun in the near vicinity, the area around the moon, the space around the moon is not dark, but is a light - appears as a light blue. And this is also the same case as looking into the sextant during alignments with the star - with the sun in somewhat vicinity of the optics. However, I have no difficulty in finding these stars in the sextant. I also had no difficulty in spotting the stars I used, such

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as Sirius, Procyon, or Canopus against the earth during our star-horizon measurements. I can see all three of those stars against the earth background. I believe it will be very difficult to do a backup GDC alignment using the north set stars, since Navi is not too bright of a star. I was able to spot star constellations in the scanning telescope if they were very bright and well known, such as Cetus and Orion, stars of this nature. I was not able to perceive other constellations. That's about the only comments I have at this time. Over.

00 13 36 48

CC

Okay. Fine; thank you very much.

00 13 36 55

GMP

We are going to do - Houston - future maneuvers for P53 in a lower - slower mode of AUTO maneuver. Essentially, we are going to load the DAP with 11101 to save fuel.

00 13 37 16

CC

Roger. That will be a 11101 DAP load.

00 13 37 20

GMP

Roger. We are going to try to save fuel that way.

00 13 37 23

CC

Good show.

00 13 37 29

LMP

With respect to the window, Houston: the windows 1 and 5 have moderate haze on them. Satisfactory for visual observation, but possibly not for photography. Windows 2 and 4 are clear. Window 3 is almost opaque. Over.

00 13 37 53

CC

Okay. Thank you.

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00 13 37 57 LMP And how is battery B looking to you?

00 13 38 27 CC Apollo 8, Houston. It looks like it may take another 6 hours on this battery B charge. It turns out that the charge rate is less than what we are getting on our ground curves, but it is still above the Apollo 7 curves, and it looks like it is going along now in good shape. And I would like to have verification that the timeline leading up to the midcourse correction was satisfactory from your point of view.

00 13 38 57 LMP Roger. Seemed quite satisfactory.

00 13 38 59 CC Okay. Thank you. And we will stay off the loop until you give us a call.

00 13 39 04 LMP Roger. You don't bother us, but our replies make a lot of noise.

00 13 39 13 CC Okay.

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00 14 43 00 LMP Houston, Apollo 8. How do you read?

00 14 43 14 CC Apollo 8, Houston. Go ahead.

00 14 43 26 CC Apollo 8, Houston. You're very weak. You got the proper OMNI?

00 14 44 02 LMP Houston, Apollo. How do you read?

00 14 44 04 CC Loud and clear, Bill. Go ahead.

00 14 44 06 LMP Okay. I'm just wondering how your tracking's doing.

00 14 44 14 CC Okay. We're still tracking you. We don't have any firm solutions, yet.

00 14 44 25 LMP Okay. Things looking nominal up here. How about down there?

00 14 44 33 CC Okay. The systems basically look good, Bill. We're going to be coming up on a cryo fan cycle period in another few minutes, and you can go ahead and do that when you get ready.

00 14 44 46 LMP Okay.

00 14 44 51 CC And I guess we picked up some suspicions about the fuel cell 2 radiator out tab. How does that compare on board?

00 14 47 56 LMP Houston, Apollo 8.

00 14 48 09 CC Apollo 8, you called?

00 14 48 13 LMP Roger. We're showing RAD OUT temp on fuel cell 2 would be about 90 degrees, and on 1 and 3 it would be slightly lower - maybe 75 or 80 degrees. About an hour ago you wondered about fuel cells performance; it looks like 1 and 2 are lower in performance than 3. Over.

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00 14 48 45 CC Roger. We show the same numbers on your outlet temperatures and thought that was a sensor failure. We've been watching the thing and we'll keep you advised of anything we see.

00 14 49 01 LMP Okay.

00 14 49 11 CC And on the performance, you're right - they are not quite the same, 1 and 2 are a little bit lower but all of these are sitting within the ballpark.

00 14 49 24 LMP Roger. Fuel cell 1 has shown slightly a proportionately higher H_2 flow than O_2 flow all day long.

00 14 49 35 CC Okay.

00 14 49 41 LMP I'm showing 0.062 H_2 and 0.48 O_2 .

00 14 49 53 CC Roger. We'll take some CAL curves on those.

00 14 50 23 LMP Okay. These things look reasonable to us and we'll keep looking at them. Our RAD OUT shows about 0.43 as opposed to your 0.48 on the oxygen, and we'll keep an eye on the CAL curves and just sort of watch it for you.

00 14 50 39 LMP Okay. Thank you.

00 14 50 46 CC If you'd like to set up some kind of a COMM check or specified time like every 30 minutes or so on these quiet periods, that would be okay with us. Might help to let us know that we're still in business.

00 14 51 03 LMP All right. Just give me a call every now and then.

00 14 51 06 CC Okay.

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00 15 03 30

CC

Apollo 8, Houston. Sometime when it's convenient,
get your BIOMED switch over to the right, and
you don't need to answer; just pass it up
to you.

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00 16 00 27	CC	Apollo 8, Houston. How about a COMM check, and did you get that fuel cell purge - correction, the cryo fans ON?
00 16 00 37	CMP	Roger. We've had the cryo fans ON each for about 3 or 4 minutes.
00 16 00 41	CC	Okay. Real good. We weren't real sure that's what we were watching, and you're coming through loud and clear.
00 16 00 48	CMP	Roger.
00 16 14 06	CC	Apollo 8, Houston.
00 16 14 08	CMP	Go ahead, Houston. Apollo 8 here.
00 16 14 13	CC	Okay, Jim. Got an update here to the flight plan. You've got the 16:55 star visibility check, and what we've got on that looks like Navi is still our star, and the numbers associated with that are roll 102.6, pitch 328.9, yaw 346.3. That gives you a shaft and trunnion of zero. And if you think you can - if you think you can do something with this, why we would like to go ahead and give it a try and see if we can either verify it or maybe we'll both learn something if we verify it if you can do it with Navi.
00 16 15 03	CMP	Roger. Stand by one.
00 16 19 52	CMP	Houston, Apollo 8. Over.
00 16 19 57	CC	Apollo 8, Houston. Go.

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00 16 20 04 CMP Roger. We'll maneuver at this present time and try to pick up that attitude and get Navi, although I think it's a waste of time, but we will give it a try.

00 16 20 13 CC Roger. Standing by for results.

00 16 38 10 CMP Houston, Apollo 8.

00 16 38 15 CC Apollo 8, Houston. Go.

00 16 38 17 CMP Roger. We're at that attitude right now and looking through the scanning telescope. I can barely see any stars at all, and every time that the thruster will fire, you know, just completely blanks out my vision.

00 16 38 35 CC Roger, 8. Understand.

00 16 38 43 CMP Now the attitude is good, Houston, as far as not having glare on the optics, and it might be a certain amount of data adaptation is required here.

00 16 39 01 CC 8, Houston. Roger. Copy.

00 17 08 57 CC Apollo 8, Houston.

00 17 09 15 CC Apollo 8, Houston. Over.

00 17 10 29 CC Apollo 8, Houston. Over.

00 17 13 33 CC Apollo 8, Houston. Over.

00 17 13 36 CMP Go ahead, Houston. Apollo 8 here.

00 17 13 41 CC Apollo 8, this is Houston. I've got a new PTC attitude for you when you finish P23. Give you a better look at the earth. Over.

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00 17 13 53 CMP Roger. Ready to copy.

00 17 13 55 CC Okay. Pitch 224, yaw 20.

00 17 14 09 CMP New PTC is pitch 224, yaw 20.

00 17 14 13 CC Affirm.

00 17 15 53 CMP Houston, Apollo 8.

00 17 15 55 CC Apollo 8, Houston. Go.

00 17 16 28 CC Apollo 8, this is Houston. Over.

00 17 16 42 CC Apollo 8, Apollo 8, Houston. Over.

00 17 16 58 CC Apollo 8, Apollo 8, Houston. Go ahead.

00 17 17 04 CMP Roger. We are taking our time going to this new P23 attitude; going to Navi is quite a ways away from the attitude we need for P23. I have a correction to make on 20 - on Navi after getting dark adapted; you can pick out Cassiopeiae and you can pick out Navi itself. It is difficult to see what stars are around. We still have quite a bit of particles that are floating with the spacecraft, especially when we move the optics and shaft. It seems to throw off a lot of particles.

00 17 17 43 CC Roger. We copy that. What's your spacecraft lighting situation inside now?

00 17 17 53 CMP We have the center window - the round window covered, and we have - the other windows are opened.

00 17 18 04 CC Roger, 8. Copy.

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00 17 24 15 CC Apollo 8, Houston.

00 17 24 17 CMP Go ahead, Houston.

00 17 24 19 CC Apollo 8, Houston. While you're maneuvering for your P23, we have an update for DELTA-H for you if you're ready to copy.

00 17 24 28 CMP Roger. Stand by.

00 17 25 04 CMP Roger, Houston. You say you have a DELTA-H update for us? Just what do you mean?

00 17 25 08 CC Roger. DELTA horizon update.

00 17 25 14 CMP Roger. Go ahead.

00 17 25 16 CC This is as a result of your P23 calibration; the update follows: VERB 24, NOUN 01, ENTER 1354, ENTER all balls, ENTER 214 50 ENTER; comment: continue to mark on the horizon destination that you've used previously. Your marks are looking very good.

00 17 25 57 CMP Roger. DELTA-H update as follows: VERB 24, NOUN 01, ENTER 1354, ENTER all zeros, ENTER 214 50 ENTER. Understand those are two octal numbers.

00 17 26 18 CC That's affirmative; both octal.

00 17 26 25 CMP Roger. When do we get the maneuvers here? I'll go out on 23, and I'll put these in; then I'll continue.

00 17 26 31 CC Okay.

00 17 27 19 CC Apollo 8, Houston. There's no requirement for you to leave P23; you can enter those right now if you want to.

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00 17 27 30 CMP Roger.

00 17 49 25 LMP Houston, are we in low bit rate now?

00 17 49 33 CC Apollo 8, Houston. You're in high bit rate.

00 17 49 38 LMP Roger. We'd like to record you this P23 stuff.

00 17 49 43 CC Okay.

00 17 49 49 LMP How about commanding low bit rate record FORWARD.

00 17 49 53 CC Roger. Low bit rate, record FORWARD.

00 17 50 25 LMP All right, Houston. Have you sent those commands yet?

00 17 50 28 CC Apollo 8, Houston. They have been sent.

00 17 50 32 LMP All right, Roger. Thank you. I am on the other side, too lazy to go over and get it.

00 17 52 09 CC Apollo 8, Houston. We'd like to go back to high bit rate in order to get this P23 data recorded. Over.

00 17 52 36 LMP Our checklist says low bit rate, Houston. If you want high, you can have it.

00 17 52 40 CC Roger. We're going high bit rate.

00 17 52 46 LMP Okay.

00 18 09 15 CC Apollo 8, Houston.

00 18 09 20 CDR Go ahead, Houston.

00 18 09 22 CC Apollo 8, Houston. Do you want us to turn off your DSE for you? It's probably about half full. We're getting good high bit rate down.

00 18 09 31 CDR Do you want to get the rest of this data?

00 18 09 34 CC We're getting good high bit rate down.

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00 18 09 39 CDR Roger. Go ahead.

00 18 09 41 CC Okay. And, also, we're - your state vector is now based on about 5 hours of tracking. We have you on a pericynthian of 69.7 miles with a free return. Your entry flight path angle looks like about minus 14. You will need only a few feet per second to get you back on a nominal entry angle.

00 18 10 43 CC Apollo 8, Houston. Did you get the words on the state vector?

00 18 11 14 CDR Houston, did you read? Apollo 8. We got a lot of noise.

00 18 11 20 CC Apollo 8, Houston. Go ahead.

00 18 11 40 CDR Houston, Apollo 8.

00 18 11 43 CC Apollo 8, Houston. Go.

00 18 11 54 CC Apollo 8, this is Houston reading you fairly weak. I'll repeat the state vector information. Your state vector is now based on 5 hours, more than 5 hours of tracking. We show you on a pericynthian of 69.7 miles with a free return with entry path flight angle of minus 14 degrees. Will only need a few feet per second at the lunar distance to get you back on a nominal entry angle. Over.

00 18 12 31 CDR Roger. Copy.

00 18 12 33 CC Roger.